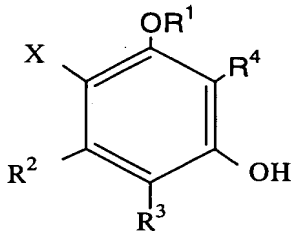
CLAIMS

[1] A compound represented by formula (I),

[Formula 1]



(I)

[wherein

X is a hydrogen atom or a halogen atom;

R^1 is a hydrogen atom or $-(C_nH_{2n})-R'$ (wherein n is an integer of 1 to 5; and R' is a hydrogen atom, a group COOR'' or -COR''' of a substituent on any one of the n carbon atoms, wherein R'' is a hydrogen atom or a C_{1-4} alkyl group; and R''' is a pyridyl group, an amino group substituted with a C_{1-4} alkyl group, a phenoxyalkyl group having a halogen atom on the carbon atoms of the benzene ring or a phenyl group having a C_{1-4} alkoxy group or a C_{1-4} alkoxycarbonyl group on the carbon atoms of the benzene ring);

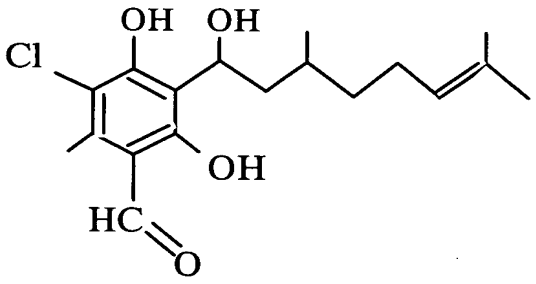
R^2 is a hydrogen atom or a C_{1-4} alkyl group;

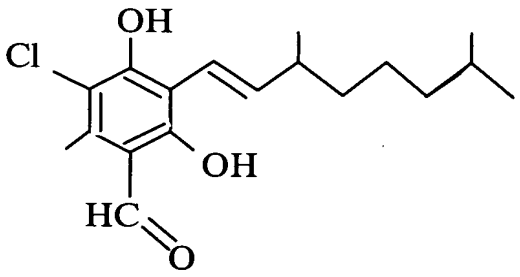
R^3 is -CHO or -COOH; and

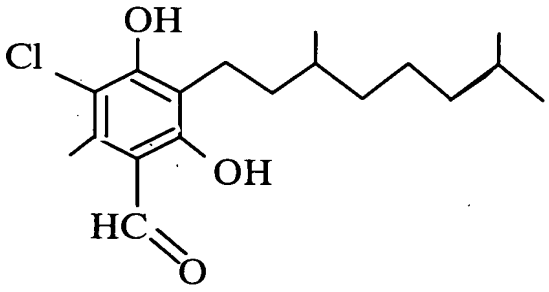
R^4 is $-CH=CH-(CH_2)_p-CH_3$ (wherein p is an integer of 1 to 12), $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 13), $-CH(OH)-CH_2-CH(CH_3)-(CH_2)_2-CH=C(CH_3)_2$, $-CH=CH-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$, $-(CH_2)_2-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$ or $-(CH_2)_8-CH_3$],

a compound represented by the following formulae,

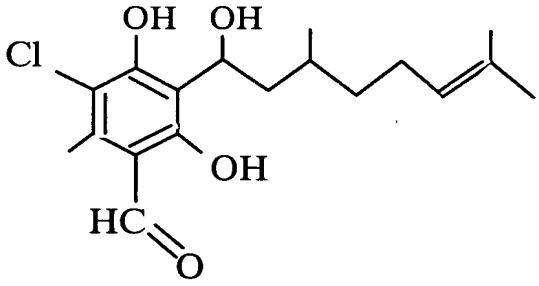
[Formula 2-1]

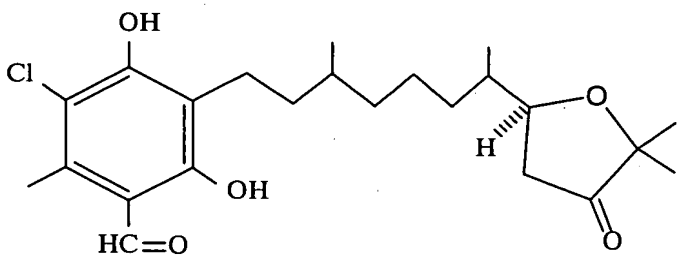


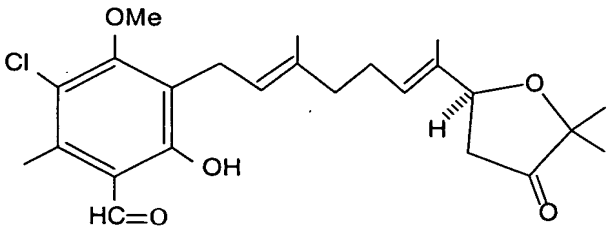


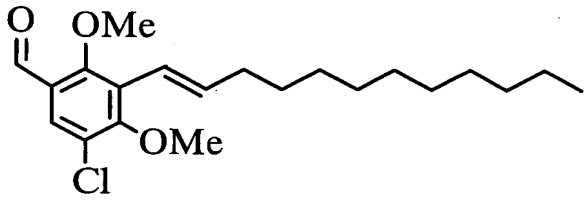


[Formula 2-2]

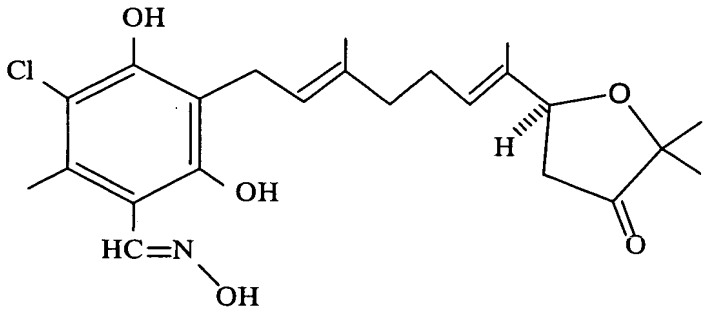








[Formula 2-3]



an optical isomer thereof or a pharmaceutically acceptable salt thereof.

[2] The compound of claim 1 represented by formula (I), wherein

X is a hydrogen atom;

R^1 is a hydrogen atom;

R^2 is a C_{1-4} alkyl group;

R^3 is -CHO; and

R^4 is $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 12),

an optical isomer thereof or a pharmaceutically acceptable salt thereof.

[3] The compound of claim 1 represented by formula (I), wherein

X is a halogen atom;

R^1 is a hydrogen atom;

R^2 is a C_{1-4} alkyl group;

R^3 is -CHO; and

R^4 is $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 12),

an optical isomer thereof or a pharmaceutically acceptable salt thereof.

[4] The compound of claim 1 represented by formula (I), wherein

X is a hydrogen atom or a halogen atom;

R^1 is a hydrogen atom;

R^2 is a hydrogen atom or a C_{1-4} alkyl group;

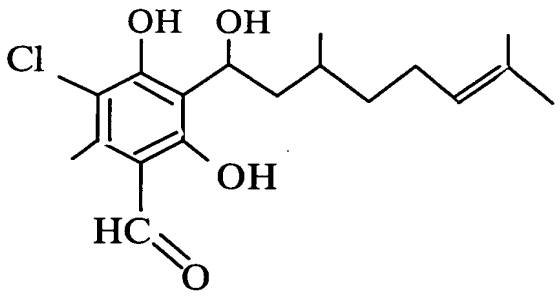
R^3 is -CHO; and

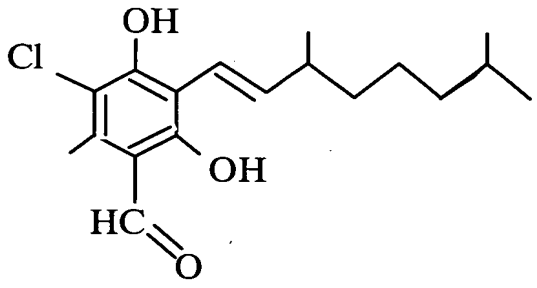
R^4 is $-CH=CH-(CH_2)_p-CH_3$ (wherein p is an integer of 1 to 12),

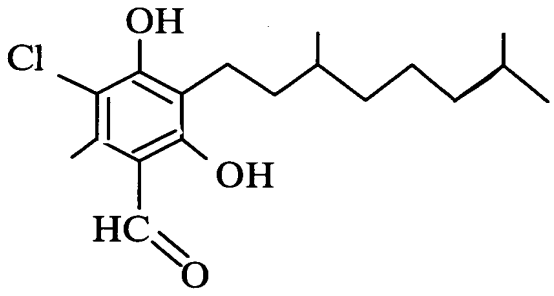
an optical isomer thereof or a pharmaceutically acceptable salt thereof.

[5] The compound of claim 1 selected from the following formulae:

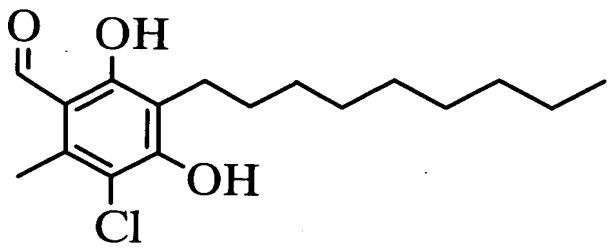
[Formula 3-1]

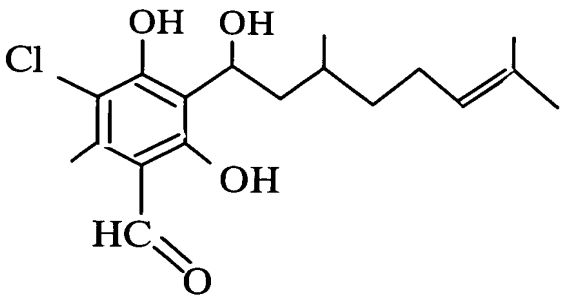


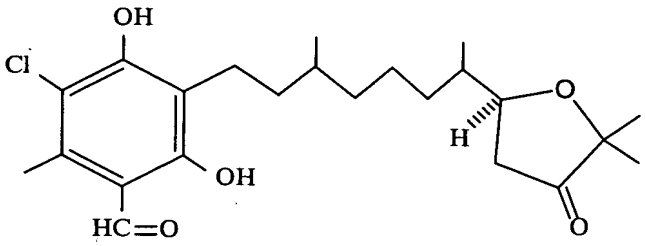


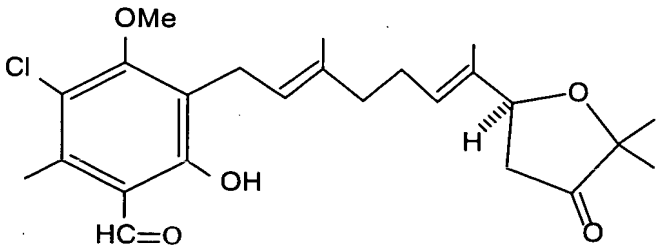


[Formula 3-2]

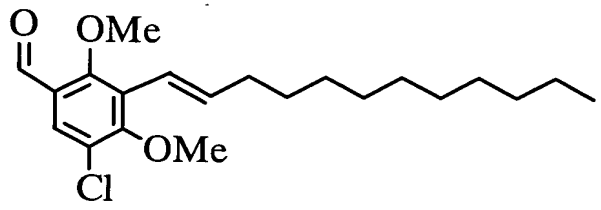


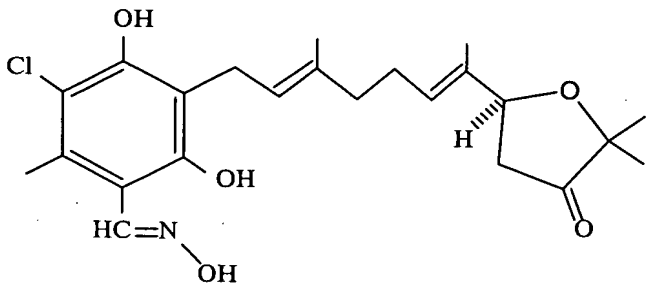






[Formula 3-3]

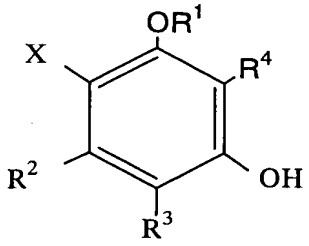




an optical isomer thereof or a pharmaceutically acceptable salt thereof.

[6] A pharmaceutical composition comprising at least one of a compound represented by formula (I),

[Formula 4]



(I)

[wherein

X is a hydrogen atom or a halogen atom;

R^1 is a hydrogen atom or $-(C_nH_{2n})-R'$ (wherein n is an integer of 1 to 5; and R' is a hydrogen atom, a group COOR'' or -COR''' of a substituent on any one of the n carbon atoms, wherein R'' is a hydrogen atom or a C_{1-4} alkyl

group; and R''' is a pyridyl group, an amino group substituted with a C_{1-4} alkyl group, a phenoxyalkyl group having a halogen atom on the carbon atoms of the benzene ring or a phenyl group having a C_{1-4} alkoxy group or a C_{1-4} alkoxycarbonyl group on the carbon atoms of the benzene ring);

R^2 is a hydrogen atom or a C_{1-4} alkyl group;

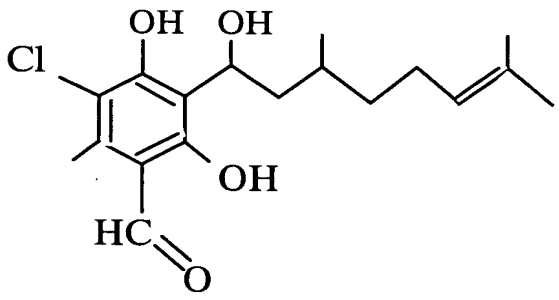
R^3 is -CHO or -COOH; and

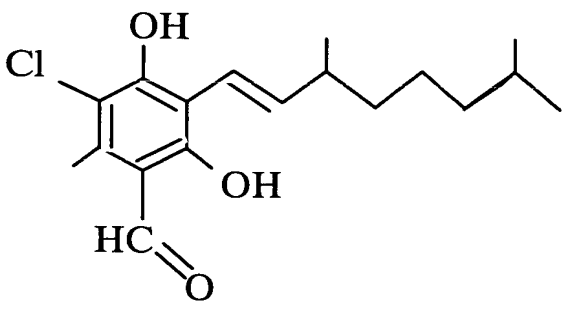
R^4 is $-CH=CH-(CH_2)_p-CH_3$ (wherein p is an integer of 1 to 12), $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 13),

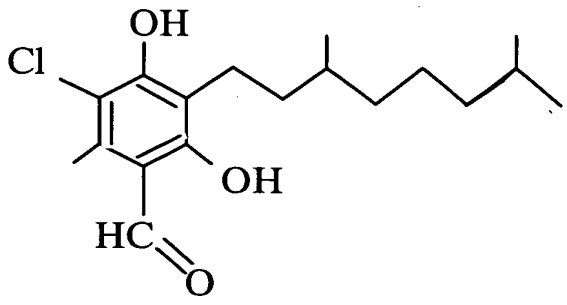
$-CH(OH)-CH_2-CH(CH_3)-(CH_2)_2-CH=C(CH_3)_2$, $-CH=CH-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$, $-(CH_2)_2-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$ or $-(CH_2)_8-CH_3$],

a compound represented by the following formulae:

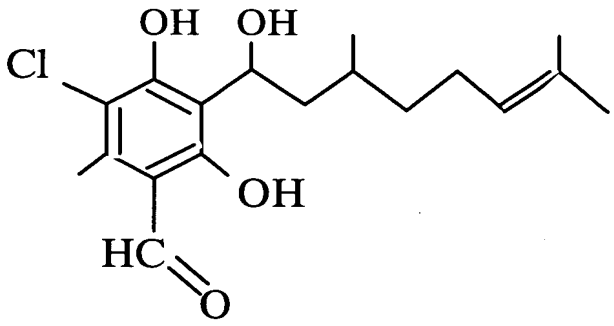
[Formula 5-1]

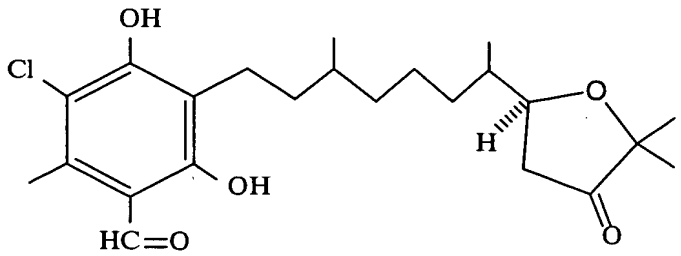


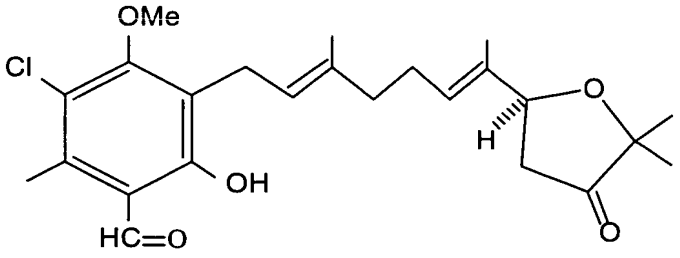


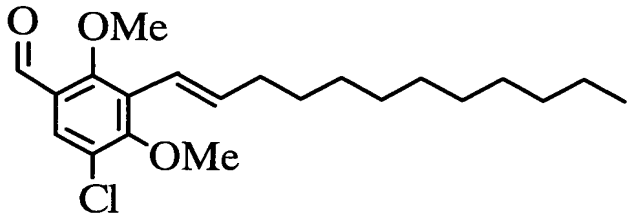


[Formula 5-2]

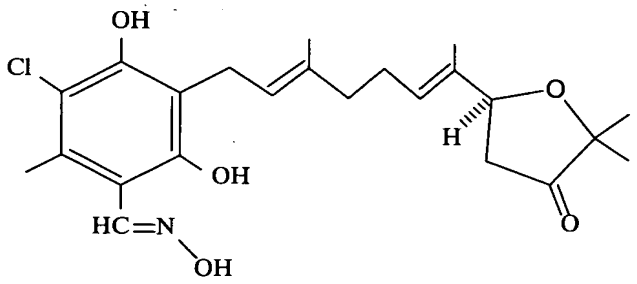








[Formula 5-3]



an optical isomer thereof and an pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

[7] The pharmaceutical composition of claim 6 comprising a compound represented by formula (I),

wherein

X is a hydrogen atom;

R^1 is a hydrogen atom;

R^2 is a C_{1-4} alkyl group;

R^3 is -CHO; and

R^4 is $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 12.

[8] The pharmaceutical composition of claim 6 comprising a compound represented by formula (I),

wherein

X is a halogen atom;

R^1 is a hydrogen atom;

R^2 is a C_{1-4} alkyl group;

R^3 is -CHO; and

R^4 is $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 12.

[9] The pharmaceutical composition of claim 6 comprising a compound represented by formula (I),

wherein

X is a hydrogen atom or a halogen atom;

R^1 is a hydrogen atom;

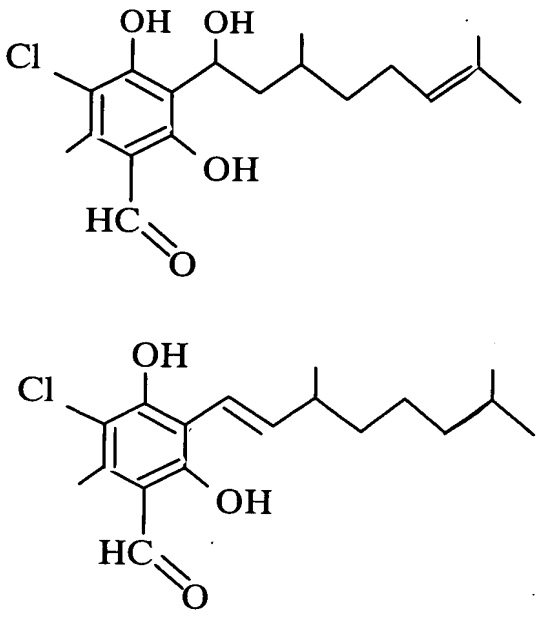
R^2 is a hydrogen atom or a C_{1-4} alkyl group;

R^3 is -CHO; and

R^4 is $-CH=CH-(CH_2)_p-CH_3$ (wherein p is an integer of 1 to 12.

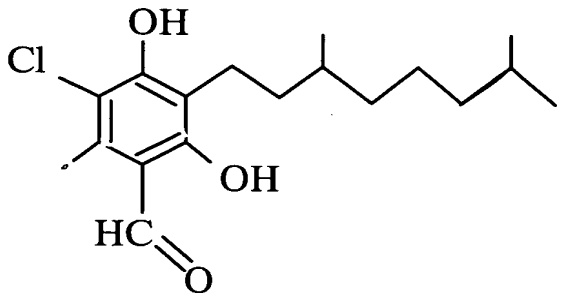
[10] The pharmaceutical composition of claim 6 comprising at least one of a compound represented by the following formulae:

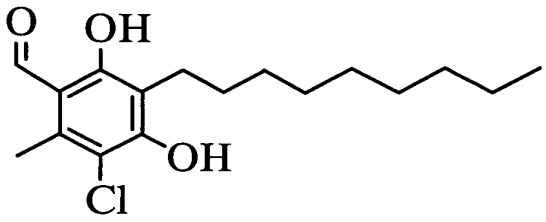
[Formula 6-1]

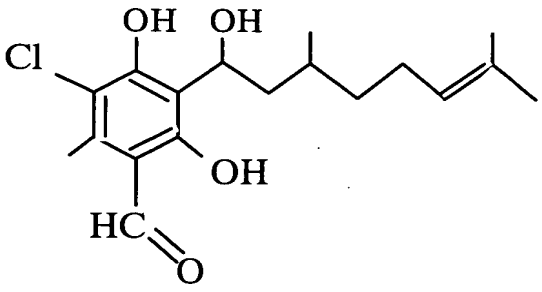

OH
OH
Cl
OH
HC
O

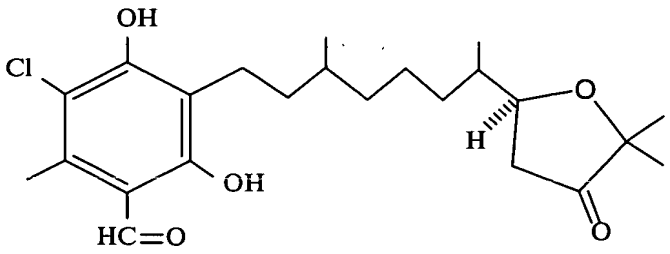
OH
Cl
OH
HC
O

[Formula 6-2]

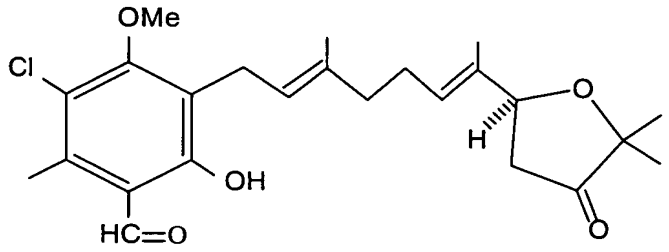


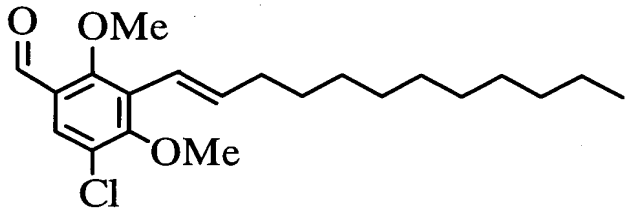


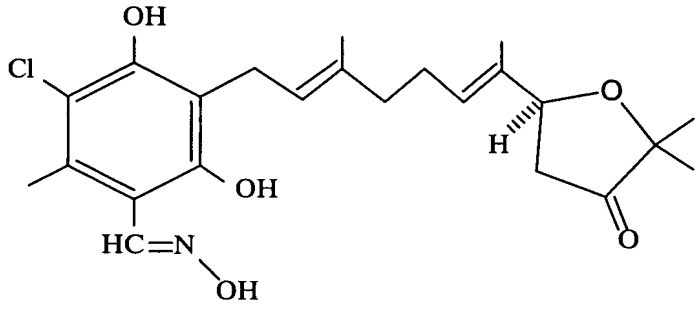




[Formula 6-3]





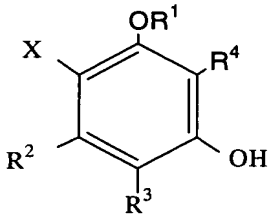


an optical isomer thereof and a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

[11] The pharmaceutical composition of any one of claims 6 to 10 which comprises glycerin.

[12] An antitrypanosoma preventing agent and treating agent comprising at least one of a compound represented by formula (I),

[Formula 7]



(I)

[wherein

X is a hydrogen atom or a halogen atom;

R^1 is a hydrogen atom or $-(C_nH_{2n})-R'$ (wherein n is an integer of 1 to 5; and R' is a hydrogen atom, a group COOR'' or -COR''' of a substituent on any one of the n carbon atoms, wherein R'' is a hydrogen atom or a C_{1-4} alkyl group; and R''' is a pyridyl group, an amino group substituted with a C_{1-4} alkyl group, a phenoxyalkyl group having a halogen atom on the carbon atoms of the benzene ring or a phenyl group having a C_{1-4} alkoxy group or a C_{1-4} alkoxycarbonyl group on the carbon atoms of the benzene ring);

R^2 is a hydrogen atom or a C_{1-4} alkyl group;

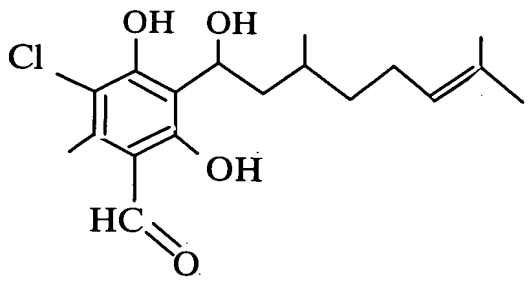
R^3 is -CHO or -COOH; and

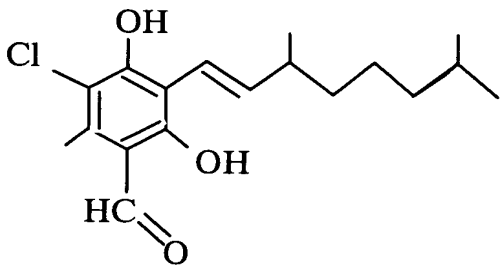
R^4 is $-CH=CH-(CH_2)_p-CH_3$ (wherein p is an integer of 1 to 12), $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 13),

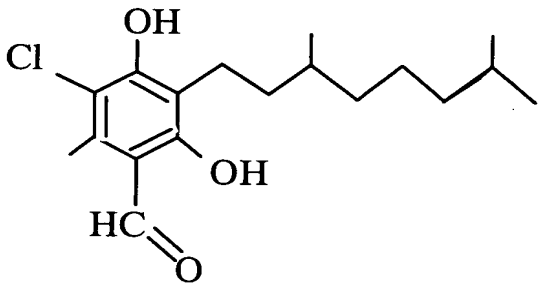
$-CH(OH)-CH_2-CH(CH_3)-(CH_2)_2-CH=C(CH_3)_2$, $-CH=CH-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$, $-(CH_2)_2-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$ or $-(CH_2)_8-CH_3$],

a compound represented by the following formulae,

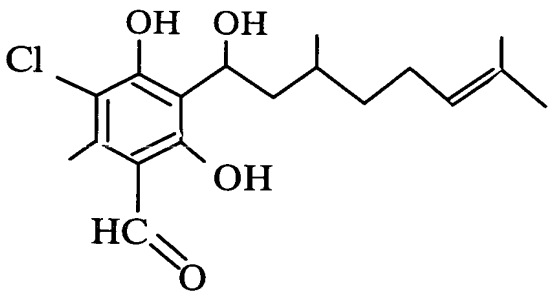
[Formula 8-1]

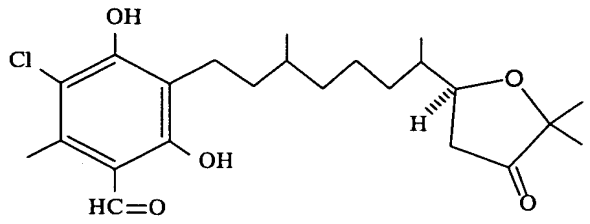


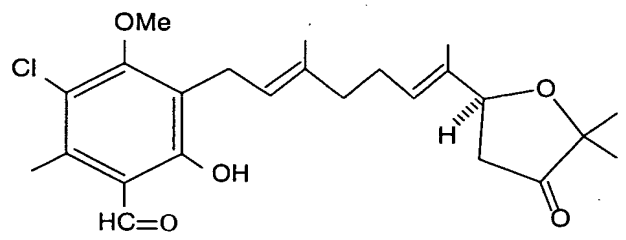


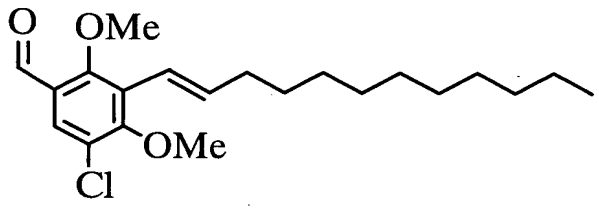


[Formula 8-2]

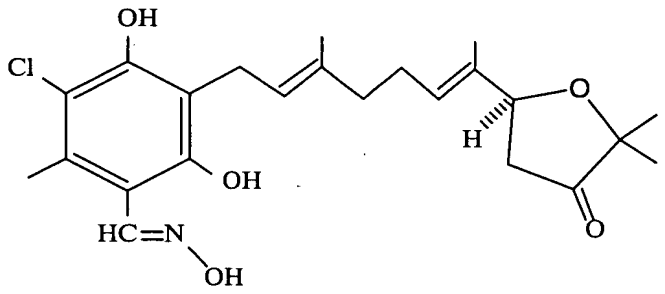








[Formula 8-3]

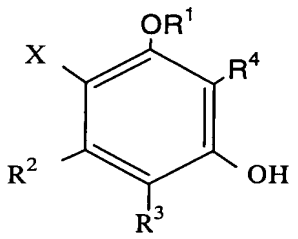


an optical isomer thereof and a pharmaceutically acceptable salt thereof as an active ingredient.

[13] The antitrypanosoma preventing agent and treating agent of claim 12 which comprises glycerin.

[14] Use of at least one of a compound represented by formula (I),

[Formula 9]



(I)

[wherein

X is a hydrogen atom or a halogen atom;

R^1 is a hydrogen atom or $-(C_nH_{2n})-R'$ (wherein n is an integer of 1 to 5; and R' is a hydrogen atom, a group COOR'' or -COR''' of a substituent on any one of the n carbon atoms, wherein R'' is a hydrogen atom or a C_{1-4} alkyl group; and R''' is a pyridyl group, an amino group substituted with a C_{1-4} alkyl group, a phenoxyalkyl group having a halogen atom on the carbon atoms of the benzene ring or a phenyl group having a C_{1-4} alkoxy group or a C_{1-4} alkoxycarbonyl group on the carbon atoms of the benzene ring);

R^2 is a hydrogen atom or a C_{1-4} alkyl group;

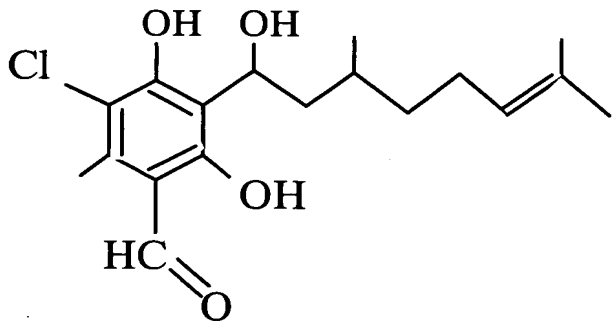
R^3 is -CHO or -COOH; and

R^4 is $-CH=CH-(CH_2)_p-CH_3$ (wherein p is an integer of 1 to 12), $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 13),

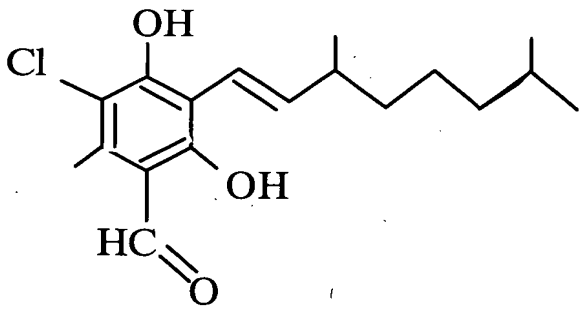
$-CH(OH)-CH_2-CH(CH_3)-(CH_2)_2-CH=C(CH_3)_2$, $-CH=CH-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$, $-(CH_2)_2-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$ or $-(CH_2)_8-CH_3$],

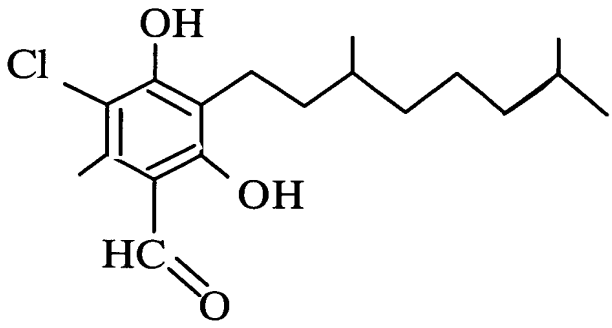
a compound represented by the following formulae,

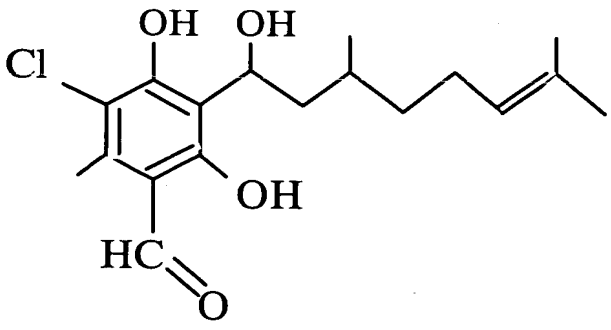
[Formula 10-1]

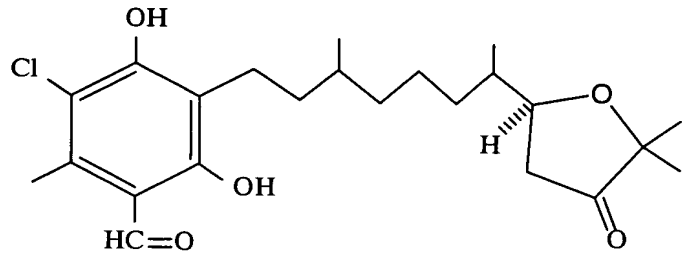


[Formula 10-2]

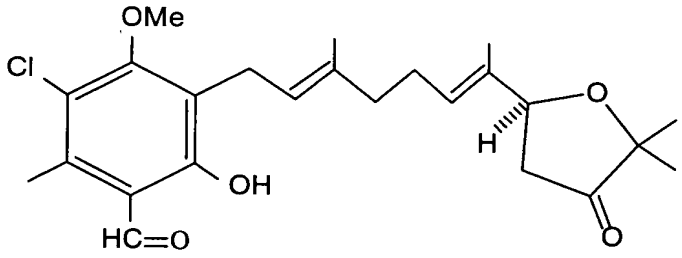


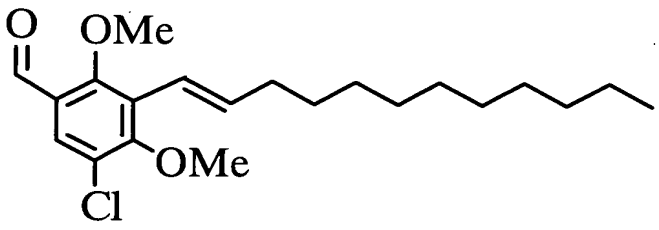


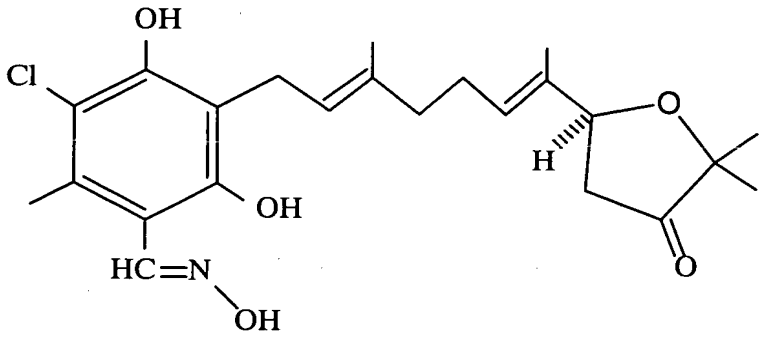




[Formula 10-3]





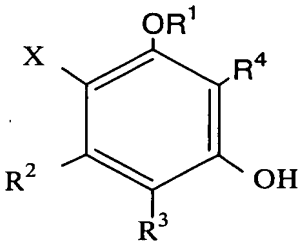


an optical isomer thereof and a pharmaceutically acceptable salt thereof in producing an antitrypanosoma preventing agent and treating agent.

[15] The use of claim 14, wherein the antitrypanosoma preventing agent and treating agent comprise glycerin.

[16] A method of preventing and treating the diseases caused by trypanosoma comprising administering an effective amount of at least one of a compound represented by formula (I):

[Formula 11]



(I)

[wherein

X is a hydrogen atom or a halogen atom;

R^1 is a hydrogen atom or $-(C_nH_{2n})-R'$ (wherein n is an integer of 1 to 5; and R' is a hydrogen atom, a group COOR'' or -COR''' of a substituent on any one of the n carbon atoms, wherein R'' is a hydrogen atom or a C_{1-4} alkyl group; and R''' is a pyridyl group, an amino group substituted with a C_{1-4} alkyl group, a phenoxyalkyl group having a halogen atom on the carbon atoms of the benzene ring or a phenyl group having a C_{1-4} alkoxy group or a C_{1-4} alkoxycarbonyl group on the carbon atoms of the benzene ring);

R^2 is a hydrogen atom or a C_{1-4} alkyl group;

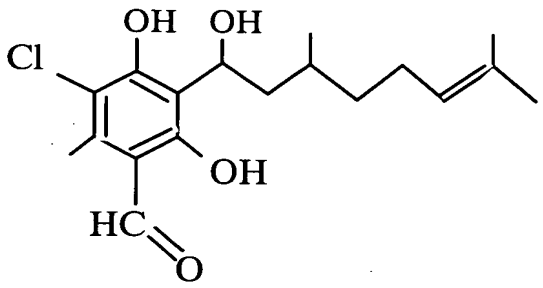
R^3 is -CHO or -COOH; and

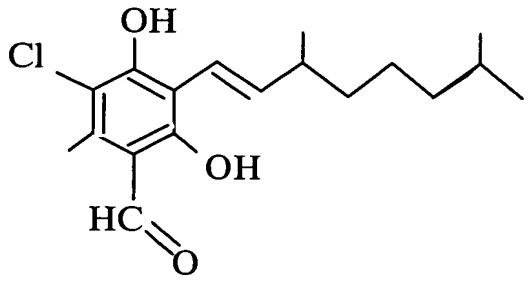
R^4 is $-CH=CH-(CH_2)_p-CH_3$ (wherein p is an integer of 1 to 12), $-CH(OH)-(CH_2)_q-CH_3$ (wherein q is an integer of 1 to 13),

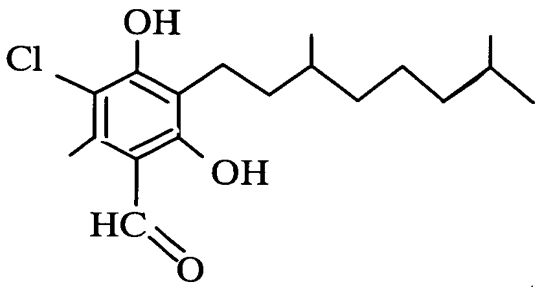
$-CH(OH)-CH_2-CH(CH_3)-(CH_2)_2-CH=C(CH_3)_2$, $-CH=CH-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$, $-(CH_2)_2-CH(CH_3)-(CH_2)_3-CH(CH_3)_2$ or $-(CH_2)_8-CH_3$],

a compound represented by the following formulae,

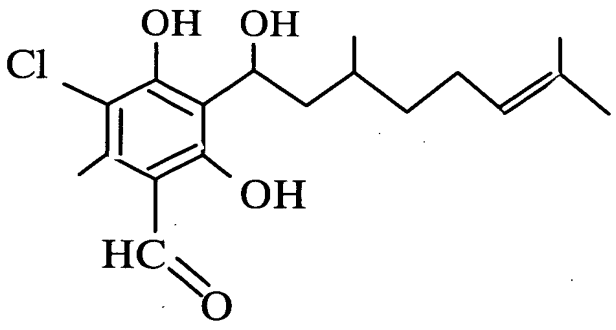
[Formula 12-1]

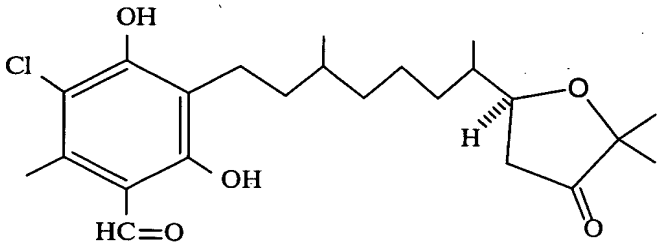


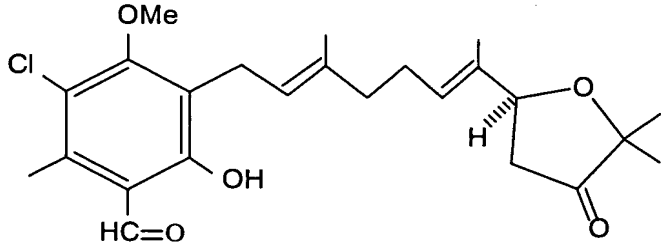


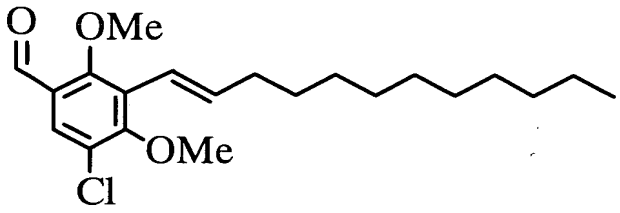


[Formula 12-2]

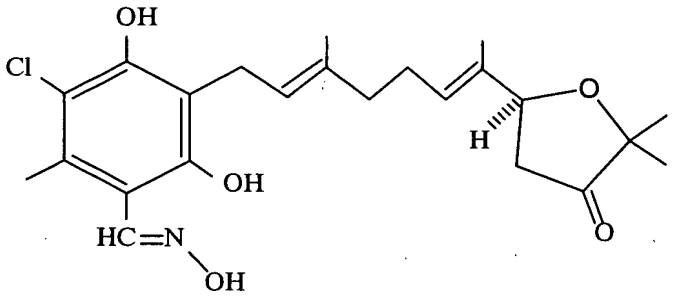








[Formula 12-3]



an optical isomer thereof and a pharmaceutically acceptable salt thereof to a patient requiring treatment.

[17] The method of claim 16 comprising using glycerin together.